

Remarks

Claims 1-15 are now pending in this application. New claims 14-15 have been added.

Amendments

Independent claim 1 has been amended to emphasize (1) that the bond between the fibrous facing material and the gypsum core forms by the penetration of the gypsum into the fibrous facing material, (2) that the radiation curable formulation is cured in place on the fibrous facing material and (3) that the panel has a surface coating of an aggregate material adhered to the radiation cured coating. Support for these amendments is found (1) on page 8 in paragraph [31], (2) on pages 6, 7, 16, and 33-34 in paragraphs [24], [26], [55], [56], and [100]-[104] and (3) on pages 34 and 35 in paragraphs [105] and [106].

The original claims included two claim 7's. To correct this problem the second claim 7 and claims 8-12 were amended to renumber them to claims 8-13. These corrections required a corresponding correction in the dependency recited in amended claims 9, 10 and 12. Amended claim 11 also was amended to specify that the surface coating of aggregate material has a surface morphology which enhances bonding of surface treatments to the panel. Support for this amendment is found on page 35 in paragraph [106]. The dependency of amended claim 12 has been corrected to claim 1. Amended claim 13 also has been amended to reflect the proper phrase for the fibrous facing material.

New claims 14-15 have been added to recite a method of making the gypsum panel of claim 1. By virtue of the recited dependency, these method claims have the same fundamental scope as claim 1. The recitation in claim 14 that the UV curable formulation is essentially free of non-reactive, volatile components is found on pages 16 and 28 in paragraphs [54] and [84]. Provided that applicants substantiate the patentability of claims 1-13, these method claims should be joined in accordance with M.P.E.P. §821.04.

No new matter has been added as a result of these amendments.

Rejection of Claims 1, 2 and 7-11 under 35 U.S.C. § 103(a) (O. A. Paragraph 2)

Claims 1, 2 and 7-11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Colbert (U.S.2004/0154264) in view of either Takahashi et al., (U.S. 2003/0113520) or Sugimoto et al., (U.S. 4,514,471). Applicants respectfully traverse this rejection.

Colbert describes a method of making a gypsum wallboard, such as a conventional wallboard having paper facers, in which before the drying oven in the conventional manufacturing operation a thin, smooth coating of a joint compound-like material is applied to one surface of the “wet” wallboard and the coating and wet wallboard are both dried in the oven. The resulting wallboard is thus suitable for applications requiring Level 4 or Level 5 finishing (paragraphs [0076]-[0079]).

In the rejection the examiner alludes to paragraph [0039] of Colbert and asserts that “UV radiation resistance is obtained by exposing the overall surfaces to UV wavelengths.” It is not clear from the Office Action for what purpose this portion of the Colbert specification is attempted to be used in connection with the rejection. For the record, paragraph [0039] actually only describes an assay or test for assessing the “UV radiation resistance” of any board. “UV radiation resistance” in the context of Colbert is simply the ability of the board to resist discoloration, e.g., yellowing, on exposure to UV radiation. See also paragraphs [0040]-[0043]. The board is not subject to UV radiation for any reason associated with its manufacture. Furthermore, the disclosure of the testing of a gypsum board for discoloration does not provide a basis for combining the disclosure with other disclosures (as apparently is the reason for the reference to this aspect of Colbert) that may include some reference to resins that cure by exposure to radiation such as UV radiation. Accordingly, applicants submit that there is no basis, aside from an improper hindsight evaluation, supporting the combination of Colbert with either of the secondary references. Surely, the disclosure in paragraph [0039] of Colbert does not provide that support.

Takahashi is directed to a decorative material comprising a substrate, a print layer on the substrate, a protective layer on the print layer and a stress relaxing layer, which acts as a primer, interposed between the print layer and the protective layer. This combination of elements is

referred to as the decorative sheet 1 in paragraph [0104] of Takahashi. By using the primer layer, the problem of an insufficient adhesion between the print layer and protective layer is corrected. This problem is encountered when the protective layer is formed with the necessary hardness to function properly as a protection (e.g., to resist staining). The protective layer is conventionally a radiation cured resin, such as an electron beam-cured resin. Substrates contemplated for the decorative material include mainly paper and plastic films (see for example paragraphs [0058], [0059] and [0126]). In formulating the “ionizing radiation-cured resin” for coating, Takahashi uses a solvent (see paragraphs [0098], [0099] and [0103]).

Takahashi then discloses that the decorative sheet 1 itself can be applied to other substrates, including a gypsum board, by using an adhesive to fix the sheet to the substrate as described in paragraph [0105] and shown in Figures 2 and 3. At the time the decorative sheet 1 is bonded to such a substrate, however, the protective layer of that sheet has already been cured. Thus, Takahashi does not suggest or describe a gypsum panel in which a radiation cured coating of a radiation curable formulation is cured in place on the fibrous facing material as required by claim 1 and as inherent in the method of claim 14.

As consequence of this difference, the bond between the decorative sheet and the substrate in Takahashi is due to the use of an adhesive, while in the present invention a bond is obtained because the radiation curable formulation is cured on the fibrous facing material that is adhered directly to the gypsum core by penetration of the gypsum. No separate adhesive is involved linking the radiation cured coating to the fibrous facing material of the gypsum panel. The Takahashi approach also is much more cumbersome to implement as it requires the separate steps of making the decorative sheet and then applying that sheet to a substrate.

Nothing in Takahashi or Colbert suggests that a radiation curable formulation could or should be cured in place on the fibrous facing material that itself is adhered directly to the gypsum core by penetration of the gypsum.

Takahashi also is silent about the provision of an aggregate coating on the surface of the radiation cured coating.

Takahashi also fails to suggest or disclose the method of forming the gypsum panel of claim 1 and defined by new method claims 14 and 15.

Sugimoto is directed to a process for preparing a colored tile from a gypsum substrate formed from a hydrated gypsum slurry (Col. 2, lines 29-33) and does not contain any disclosure of forming a gypsum panel having fibrous facing material. According to Sugimoto, the electron beam curing resin is applied directly to the gypsum substrate and not onto a fibrous facing material and thus the resin is aimed at being bonded directly to the gypsum (Col. 5, line 47-Col. 6, line 3 and Col. 6, lines 20-41). After applying the coating to the gypsum, the resin composition is either covered with a plastic film or the coated gypsum tile is placed in an oxygen-free irradiation chamber (or both) before effecting irradiation. Sugimoto also has no disclosure about applying a surface coating of an aggregate material onto the coating of the radiation curable formulation before the radiation curable formulation is cured.

Extrapolation of the teachings of Sugimoto to the present invention (and thus its combination with Colbert) is arrived at only by an impermissible hindsight evaluation of the invention. Nothing in Sugimoto suggests that one should combine any of its teachings with the board manufacturing teachings of Colbert. Nonetheless, even if those teachings were combined, one still is lacking at a minimum the required element of a surface coating of an aggregate material onto the cured coating of the radiation curable formulation.

Rejection of Claims 3-8, and 12 under 35 U.S.C. § 103(a) (O.A. Paragraph 3)

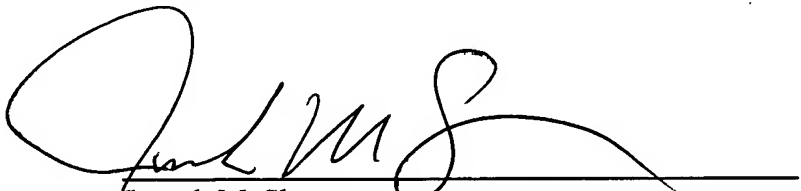
Claims 3-8 and 12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Colbert (U.S.2004/0154264) in view of either Takahashi et al., (U.S. 2003/0113520) or Sugimoto et al., (U.S. 4,514,471) and further in view of Randall et al., (U.S. 2003/0203191). Applicants respectfully traverse this rejection.

The Randall '191 publication does not remedy any of the deficiencies of the primary or secondary references as described above and does not provide a separate basis for their combination. As a result, claims 3-8 and 12 are patentable for the very same reasons advanced above with respect to the rejection of claim 1 and others.

When the invention, as defined by the pending claims, is properly considered, there is no *prima facie* case for the obviousness rejections set forth in the Office Action. Thus there is no valid basis for finding the pending claims unpatentable based on the cited documents.

For the reasons given above, the rejections of the pending claims under 35 U.S.C. §103(a) are improper and the rejections should be withdrawn. Reconsideration and the allowance of the pending claims are thus respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'JMS', is written over a horizontal line.

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